

**WHAT IS CLAIMED IS:**

1. An isolated feline thyrotropin  $\beta$ -subunit polypeptide comprising an amino acid sequence with at least 80% identity to SEQ ID NO: 1.  
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2. The feline thyrotropin  $\beta$ -subunit polypeptide of claim 1, wherein the amino acid sequence consists essentially of SEQ ID NO: 1.
3. The feline thyrotropin  $\beta$ -subunit polypeptide of claim 1, further comprising a  
10 signal sequence.
4. The feline thyrotropin  $\beta$ -subunit polypeptide of claim 3, wherein the polypeptide comprises an amino acid sequence with at least 80% identity to SEQ ID NO: 2.  
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5. An isolated feline thyrotropin  $\alpha$ -subunit polypeptide comprising an amino acid sequence with at least 80% identity to SEQ ID NO: 3.
6. The feline thyrotropin  $\alpha$ -subunit polypeptide of claim 5, wherein the amino  
20 acid sequence consists essentially of SEQ ID NO: 3.
7. A feline thyrotropin  $\alpha$ -subunit polypeptide of claim 5, further comprising a signal sequence.
- 25 8. The feline thyrotropin  $\alpha$ -subunit polypeptide of claim 7, wherein the polypeptide comprises an amino acid sequence with at least 80% identity to SEQ ID NO: 4.
9. An isolated feline thyrotropin yoked polypeptide comprising an amino acid  
30 sequence with at least 80% identity to SEQ ID NO: 5.

10. The feline thyrotropin yoked polypeptide of claim 9, wherein the amino acid sequence consists essentially of SEQ ID NO: 5.

11. A feline thyrotropin yoked polypeptide of claim 9, further comprising a  
5 signal sequence.

12. The feline thyrotropin yoked polypeptide of claim 11, wherein polypeptide comprises an amino acid sequence with at least 80% identity to SEQ ID NO: 6.

10 13. An isolated feline thyrotropin yoked polypeptide consisting essentially of:  
SEQ ID NO: 1 and SEQ ID NO: 3,  
wherein the polypeptide sequences are connected by a spacer peptide.

14. An isolated polynucleotide comprising a nucleic acid sequence encoding the  
15 feline thyrotropin  $\beta$ -subunit polypeptide of claim 4.

15. The isolated polynucleotide encoding feline thyrotropin  $\beta$ -subunit polypeptide of claim 14, wherein the polynucleotide consists essentially of SEQ ID NO: 7.

20 16. The isolated polynucleotide encoding feline thyrotropin  $\beta$ -subunit polypeptide of claim 14, wherein the polynucleotide consists essentially of SEQ ID NO: 8.

25 17. An isolated polynucleotide comprising a nucleic acid sequence encoding feline thyrotropin  $\alpha$ -subunit polypeptide of claim 8.

18. The isolated polynucleotide encoding feline thyrotropin  $\alpha$ -subunit polypeptide of claim 17, wherein the polynucleotide consists essentially of SEQ ID  
30 NO: 9 or SEQ ID NO: 10.

19. An isolated polynucleotide comprising a nucleic acid sequence encoding the feline thyrotropin yoked polypeptide of claim 12.

20. The isolated polynucleotide encoding feline thyrotropin yoked polypeptide of claim 19, wherein the polynucleotide consists essentially of SEQ ID NO: 11.
- 5 21. The isolated polynucleotide encoding feline thyrotropin yoked polypeptide of claim 19, wherein the polynucleotide consists essentially of SEQ ID NO: 12.
22. A vector comprising a polynucleotide according to claim 14, 17, or 19, wherein the vector further comprises a regulatory sequence operably linked to the 10 polynucleotide.
23. The vector of claim 22, wherein the vector is viral or non-viral.
24. The vector of claim 23, wherein the vector is integrating or non-integrating. 15
25. An isolated antibody that specifically binds to a feline thyrotropin polypeptide according to claim 1, 5, 9, or 13.
26. The antibody of claim 25, wherein the antibody is a monoclonal antibody. 20
27. The monoclonal antibody of claim 26, wherein the monoclonal antibody is humanized.
28. The antibody of claim 25, wherein the antibody is a polyclonal antibody. 25
29. A method of detecting physiological levels of feline thyrotropin in a sample comprising:  
obtaining a sample from a cat to be tested;  
contacting said sample with an antibody according to claim 25; and  
30 assessing complex formation between the antibody and feline thyrotropin.
30. The method of claim 29, wherein the feline sample is a bodily fluid.

31. The method of claim 29, wherein the method comprises a sandwich-type immunoassay.
32. The method of claim 29, wherein the method of detecting feline thyrotropin further comprises diagnosing a feline thyroid disorder.  
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33. The method of claim 32, wherein the feline thyroid disorder comprises feline hyperthyroidism.
- 10 34. A method of treating a mammal suspected of having hyperthyroidism comprising:  
administering to the mammal a feline thyrotropin heterodimer comprising feline thyrotropin  $\alpha$ -subunit and  $\beta$ -subunit polypeptide according to claims 1 and 5, or a feline thyrotropin yoked polypeptide according to claim 13.  
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35. The method of claim 34, wherein the mammal is a cat.
- 20 36. The method of claim 34, wherein the method further comprises sensitizing the thyroid to increase the response of the thyroid to ablative treatment with radioiodide.  
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37. A pharmaceutical composition comprising a pharmaceutically acceptable carrier and a feline thyrotropin heterodimer comprising feline thyrotropin  $\alpha$ -subunit and  $\beta$ -subunit polypeptide according to claims 1 and 5, or a feline thyrotropin yoked polypeptide according to claim 13.  
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38. The pharmaceutical composition of claim 37, wherein the composition is formulated as a single unit dosage.
39. A transgenic eukaryotic cell comprising:  
a eukaryotic cell; and  
a polynucleotide according to claim 14, 17, or 19.

40. The transgenic eukaryotic cell of claim 39, wherein the eukaryotic cell comprises an insect cell derived from *Spodoptera frugiperda*, a Chinese hamster ovary cell, or a human embryonic kidney cell.
- 5    41. The transgenic eukaryotic cell of claim 39, wherein the cell stably expresses the feline thyrotropin  $\alpha$ -subunit polypeptide of claim 5.
- 10    42. The transgenic eukaryotic cell of claim 41, further comprising a polynucleotide comprising a nucleic acid sequence encoding a  $\beta$ -subunit polypeptide from follicle stimulating hormone or luteinizing hormone.
43. The transgenic eukaryotic cell of claim 39, wherein the cell stably expresses the feline thyrotropin yoked polypeptide of claim 13.
- 15    44. A method for making a feline thyrotropin polypeptide, comprising: transfecting a eukaryotic cell with a vector of claim 22; and expressing the polynucleotide encoding a feline thyrotropin polypeptide in the eukaryotic cell.
- 20    45. The method of claim 44, further comprising purifying the expressed feline thyrotropin polypeptide.
- 25    46. The method of claim 44, wherein the cell comprises an insect cell derived from *Spodoptera frugiperda*, a Chinese hamster ovary cell, or a human embryonic kidney cell.
47. The method of claim 44, wherein the method comprises making a feline thyrotropin heterodimer and further comprises the step of contemporaneously transfecting the cell with vectors carrying polynucleotides that prompt the expression of feline thyrotropin  $\beta$ -subunit polypeptide and feline thyrotropin  $\alpha$ -subunit polypeptide.

48. The method of claim 44, wherein the cell stably expresses feline thyrotropin α-subunit polypeptide.
49. A method of preparing pituitary glycoproteins comprising:
  - 5 preparing a cell according to claim 48;
  - transfected the cell with a vector comprising a polynucleotide encoding a β-subunit polypeptide from follicle stimulating hormone or luteinizing hormone; and
  - expressing the polynucleotide encoding a β-subunit polypeptide from follicle 10 stimulating hormone or luteinizing hormone in the eukaryotic cell.
50. A method of using a feline thyrotropin polypeptide prepared according to the method of claim 45 as an immunoassay standard.
- 15 51. The method of claim 50, wherein the feline thyrotropin polypeptide comprises a thyrotropin β-subunit polypeptide according to claim 1.
52. The method of claim 50, wherein the feline thyrotropin polypeptide comprises a thyrotropin α-subunit polypeptide according to claim 5.
- 20 53. The method of claim 50, wherein the feline thyrotropin polypeptide comprises a thyrotropin yoked polypeptide according to claim 9.
54. The method of claim 50, wherein the feline thyrotropin comprises a feline 25 thyrotropin heterodimer comprising thyrotropin β-subunit polypeptide according to claim 1 and a thyrotropin α-subunit polypeptide according to claim 5.